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ABSTRACT

Computer assisted instruction, and especially computer simulations, can help to ensure that preservice and inservice teachers learn from the right experiences. In the past, colleges of education used large mainframe computer systems to store student registration, provide simulation lessons on diagnosing reading difficulties, construct informal reading inventories, and provide mobile delivery service for inservice instruction. However, due to their cost and the lack of grant money, these programs are no longer in use. Today, colleges of education are using stand-alone microcomputers for tutorials, games, word processing, and simulations. Future uses of computer technology might include interactive videodiscs for the presentation of lectures, networks for online references, online testing or data base management, and teleconferencing. These uses have great potential for improving the efficiency and effectiveness of teacher learning because (1) they provide preservice teachers with designed rather than accidental sets of experiences, (2) the experiences they create decrease the chances of inexperienced teachers doing educational harm to future students, and (3) they free professors for more supervision of preservice teachers in the classroom, for more small group work, and perhaps for more research. Nevertheless, these possibilities may be hampered by the low priority colleges of education have placed on the technical training needed to implement such programs. (HOD)

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THE GHOST OF COMPUTERS PAST, PRESENT, AND FUTURE: COMPUTER USE FOR PRESERVICE/INSERVICE READING PROGRAMS

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THE GHOST OF COMPUTERS PAST, PRESENT, AND FUTURE: COMPUTER USE FOR PRESERVICE/INSERVICE READING PROGRAMS

One can hardly open a magazine or newspaper without seeing an article about declining reading achievement. Blame is widespread: some attribute the decline to cultural changes, some to the kids themselves, and others to parents. Most, however, allude to the possibility that the quality of teachers in our schools may be one factor. Regardless of who is to blame, the widespread criticism is a call to arms for teacher educators.

A major component of programs for training teachers is supervised work with pupils for practice in instruction, diagnosis and remediation. However, competency-based teacher education (CBTE) courses and practicum courses have disadvantages. First, they are costly in terms of personnel for supervision; and in this day of budget cuts at federal and state levels, many preservice teachers are spending less time in schools with children and receiving less feedback on their performance while there. Secondly, CBTE courses are time-consuming, for both the supervising professor and the preservice teacher. And thirdly, such practicum courses sometimes provide inadequate experiences for the types of learning which preservice teachers need. As you know, "SOME

experience is not the same as having the RIGHT experience, which in turn is not equivalent to LEARNING the right things from it" (Birnbaum, 1982, p. 4).

So what are we who are involved in teacher education to do when faced with decreased money and limited faculty? Although by no means a total cure, one innovation which may help increase teaching effectiveness and ensure that preservice and inservice teachers learn from the right experiences is available today. That innovation is computer assisted instruction, or CAI, and especially computer simulations. Use of CAI allows students to move at their own rates and frees professors for more supervision and small group work.

In order to develop your understanding of computer use for training preservice and inservice teachers and to ensure that time is not wasted "reinventing the wheel", let's look briefly at some of the ghosts of past CAI uses for teacher training.

In 1969 project CARE (Dupuis, 1974) began in Pennsylvania. CARE, or Computer Assisted Renewal Education, was developed at The Pennsylvania State University with the purpose of providing inservice to teachers in the states' sparsely populated areas. This instruction was provided by a mobile van with 16 computer terminals. Each unit was furnished with light sensitive pens, rear screen projection, audio tapes, a handbook and pre and post tests. The computer programs branched extensively depending on the answers teachers entered. The van was operated 12 hours per day, 6 days a week, and its cost

effectiveness allowed the addition of a second van in 1973. Since then computer programs have been written for CARE which instruct teachers in the early identification of handicapped children, in diagnostic/prescriptive teaching of pre-school and primary children, and in education of the visually handicapped.

In 1975 the National Right-to-Read Office funded a preservice computer-assisted program for teacher preparation in reading at Northwestern University (Blachowicz & Fairweather, 1978). This program used computers to manage its instruction as well as present some of its instruction. Computers were used to:

1) store student registration information.

2) do on-line assessment of student competencies, store this information, and develop a prescription of the lessons each student was to complete.

3) act as an "electronic blackboard" for messages between instructor and student.

4) route the student through the lessons prescribed.

5) provide simulation lessons on diagnosing reading difficulties, using CLOZE, and teaching word attack skills.

6) provide a bibliography of pertinent readings to be assigned each student based on his performance in the tutorials.

After this program was piloted in 1976, it was used in further preservice training, in preparing tutors for an adult reading academy, and for Right-to-Read inservice training.

Between 1976 and 1979 several people (Henny and Boysen, 1979; Roe & Aiken, 1976) reported on computer simulated programs which were used to teach informal reading inventory (IRI) techniques to college students. Normally the computer simulated an instructor who guided students through the construction of an IRI, and then the computer modeled children with reading skill weaknesses and permitted teacher trainees to identify these weaknesses by evaluating an IRI's results.

Florida State University had in 1977 a rather efficient computer managed instruction program (Mason, 1980) which tracked students who wanted to be tested for reading, basic English competencies, or for a grade in one of their courses. The computer determined the appropriateness of the requested test and provided a printed list of prescriptions for the student. Actual testing was done with machine-scorable tests which limited the amount of computer time, and thus money, required; yet fast feedback was provided to students and records were available to professors.

These are just examples of the use of computers as aids in the training of preservice and inservice teachers. They range from comprehensive programs for preservice teachers like that at Northwestern University, to mobile delivery of inservice instruction like that of project CARE, to small scale simulations for providing instruction in diagnostic procedures.

Why were these examples earlier referred to as the "ghost of computer use past?" Simply because many of these projects

and programs are now no longer in use - they are dead. And most died for one of two reasons: either they were developed for mainframe computer systems which were too costly, or they were developed through a grant and when the grant money ran out they were abandoned.

THE GHOST OF PRESENT COMPUTER USE FOR TEACHER TRAINING

It would be impossible, without calling every college of education and knowing with just whom to speak at particular colleges, to adequately list all the present uses of computers for teacher training. So let's look at the "ghostly" outline of some of the uses.

First, although there must still be mainframe computer systems in use for preservice and inservice teacher training, the only one of which this author is aware is PLATO, and it provides only limited programs for such training. A survey done under a National Science Foundation (NSF) grant (Babb, 1982) found that 90% of higher education institutes have computer facilities but that nearly one half are used for administrative purposes and not educational purposes. Out of the other 50%, uses include research and development, word processing, and financial management.

More and more colleges of education now have stand-alone microcomputers. A survey (Uhlig, 1982) mailed to deans/directors of education at 134 colleges and universities in the Southeast (Alabama, Arkansas, Florida, Georgia,

Louisiana, Mississippi, South Carolina, and Tennessee) during the fall of 1982 showed that 38.2% of the 110 respondents used microcomputers for instructional assistance in their preservice programs. Furthermore, 15.5% of those colleges and universities had developed and offered at least one specific course for preservice teachers in the use of microcomputers for instruction and management in the classroom, while 23.6% had offered such a course for inservice teachers. Almost assuredly these percentages have increased within the last year.

Colleges of education are incorporating computer training in a number of ways (Diem, 1982). Some are simply adding one more course to their graduate requirements. These are most often taught by a math or computer science person. Some add a specific education course in educational technology or restructure an old audio-visual course to include computers. Still others are spreading instruction concerning computer technology and its impact throughout the entire teacher training program; and a few, like the Bank Street College of Education, are even offering graduate programs in computers in education.

For example, Douglas Clements (1982) at Kent State University's Early Childhood Education Department outlines a course which utilizes the computer as 1) a tutor, tool, and tutee. Graduate and undergraduate students use the computer as a tutor to experience, evaluate, and modify instructional programs for children; 2) as a tool for word processing and

information management; and 3) as a tutee to be "taught" through learning to program.

George Mason, in the Reading Education Department of the University of Georgia, teaches a similar course for graduate students but without the emphasis on programming. His course focuses more on making teachers familiar with the variety of software available for several types of microcomputers commonly found in schools, on evaluating and modifying software, and on the features of computer text which enhance its readability. George McNinch, West Georgia College, teaches a related course and has conducted a summer workshop in which reading teachers learn to use word processing as an adjunct to reading instruction (personal communication, December 9, 1983).

Lehigh University in Bethlehem, Pennsylvania, has a new graduate degree program in educational technology ("Bulletin Board," 1982) to "train educators to teach WITH computers and not ABOUT computers." And Stanford University in Palo Alto, California, has a new Master of Arts major in interactive educational technology which combines courses in computer science, educational psychology, and curriculum theory. It is designed to provide teachers with the skills to produce quality educational software.

There are also numerous instances of individual professors who are having their students use tutorials, games, word processing, and simulations for specific segments of the classes they teach.

These are just a few examples of the ways colleges of education are presently utilizing computers for preservice and inservice training.

THE GHOST OF FUTURE COMPUTER USES FOR TFACHER TRAINING

The next question to be asked is, how will computer technology be used in the future for teacher training? Future uses are just a spectre on the horizon, and, unlike the ghost of the past and the ghost of the present, it is very difficult to see. But just like the ghost of Christmas future, its form can still be changed.

The vision this author would like to see would include colleges of education using interactive videodiscs for presenting some of the lectures and for providing many of the practice sessions now done as homework. Such assignments as the evaluation of readability levels of books to be used with hypothetical students, the teaching of directed reading lesson, the construction of a cloze passage, and simulated testing of students could be handled by computers and videodiscs. The computer could guide students through these procedures, presenting information by videodisc (just like watching television), quizzing students at various decision points by having them respond to questions presented on the computer screen, and providing immediate feedback and further explanation if warranted. A record of individual responses could be kept for the professor who could then provide small

group work on those areas indicated by the class profile.

In the future, teachers will need to know about networks because many reference sections of libraries will be accessed through networks. Some encyclopedias are now available via computer networks because print produced electronically is already cheaper than print on paper. Furthermore, adding new information to encyclopedias (or other materials such as science textbooks) as it becomes available in our rapidly changing world is much easier when these texts are electronically produced. Therefore, future teachers will need to be educated in the use of networks and in turn will need to teach those skills to their students. Just as children now are taught about card catalogs and reference indexes, they will need to be taught about the use of networks in the future.

Future teachers will also need to learn some features of data-base management because more and more schools will be keeping records of students in computer files. Greater use of on-line testing for public schools is probable because of the immediate feedback it provides and the easy production of individual and class profiles. Therefore, future teachers will need to know how to use utility programs for developing on-line tests. And instead of taking field trips which involve all the hassles of parental permission slips and supervision, to say nothing of the costs to school districts, more teachers in the future will use teleconferencing to bring information and experiences to the classroom.

All of these uses of computers, which teachers of the future will use, need to be taught now to preservice teachers by their colleges of education. In turn, the use of interactive videodiscs, networks, data-base management, and teleconferencing NOW could increase the efficiency of most colleges of education and the effectiveness of much of their instruction.

This scenario has great potential for improving the efficiency and effectiveness of teacher training now and the quality of future teachers that colleges of education are producing for several reasons.

1) First, preservice teachers would be provided with designed rather than accidental sets of experiences, thereby ensuring they will be able to deal more effectively with a greater range of situations when encountered in the classroom.

2) Secondly, such experiences before entering a classroom decrease the chances that inexperienced teachers might do educational harm to any student with whom they later work in the classroom.

3) Thirdly, the professor is freed for more supervision of preservice teachers in the classroom, for more small group work, and perhaps for more research.

Unfortunately, this scenario may not be the accurate one for colleges of education in the future. Many colleges and universities cannot afford the equipment needed. Contrary to

situations in countries like France and Germany where the government is funding much of the equipment and teacher training in technology, the burden of teacher training and equipment cost in the United States is falling upon university programs and local systems (Hebenstreit, 1982; Keil, 1982).

Nor do many colleges have the faculty trained to implement such programs. Not only is it a matter of having trained faculty but of being able to afford to release them from other teaching duties for the time it takes to develop needed programs and implement such programs. Perhaps such incentives as credit toward promotion and tenure could result in this vision becoming reality. Already a few universities have the official statement included in their handbook that publications and "other creative materials" will be accepted for purposes of promotion and tenure.

The computer was born on a university campus, but colleges of education have not often set a high priority on providing the technical training that teachers of the future will need. If colleges of education do not take responsibility for leadership in computer education, others will (Babb, 1982; Deim, 1982; Huntington, 1981). And those "other" may well be businesses and institutions who lack the dedication to and the expertise in providing educational opportunities befitting a democracy (Clements, 1982).

The manner in which colleges of education respond to the challenge of providing properly trained teachers will help set

the tone of the microcomputer revolution. However, the time in which to respond to that challenge is rapidly diminishing.

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